Lecture 12 - Conclusion

- A summary of the covered concepts
- Cover other things not mentioned elsewhere

Last Week Recap

- External tool integration

Toolchain
- ► Windows 10 + MS Visual Studio 2017+
- ► C++ 14+
- ► SDL 2
- ► GitHub + git

Game Engine Architecture (Unreal, Unity)

Game engine architecture is very similar to game architecture. A game essentially "lives" inside the engine.

Application Framework (Godot, FXGL)

Event bus can be used to communicate between engine subsystems.

- Event
- Dispatcher
- Handler

Entity-Component System (Overwatch, Minecraft)

Game objects are commonly represented by entities.

- ▶ Entity is a generic object.
- ▶ Component adds flavour to each entity.
- ▶ System adds behaviour to each entity.

Physics subsystem (Arx Fatalis, Sony PS3, Valve games)

- ▶ Basic game dev maths include point and vector concepts
- ▶ Collision detection adds interaction
- ▶ AABB, SAT are commonly used for collisions
- ▶ Fake Physics!

Graphics subsystem (Star Wars Jedi Academy, Metal Gear Solid 5)

- GPU programs (shaders) are *fun* ^_^
- Lots of interesting maths to make things look cool / aesthetically pleasing
- Interpolators rule!

Audio subsystem (Telltale games)

- ▶ Immersion
- ▶ Positional sound is easy to implement
- ▶ mp3 - music, wav - sound effects

AI subsystem (F.E.A.R, Assassin's Creed)

- ▶ Pathfinding is finding a path ... (no, really) - A*
- ▶ Behaviour trees, GOAP and state machines

Scripting and domain-specific languages (The Elder Scrolls V: Skyrim)

- ▶ Using scripts we can extend a game, an engine, or anything else
- ▶ Great way to modify AAA titles (if they ship with an editor)

Achievements / gameplay (Dragon Age Inquisition)

▶ Numbers! Numbers! Numbers!
▶ Also quests, tutorials and other gameplay tricks.

External tool integration (Tiled Map Editor, 3ds Max)

- ▶ Avoids reinventing the wheel
- ▶ Increases productivity

Activity
TODO: What else do we want to cover?

Conclusion

- ► We have covered game engine fundamentals - a millimetre tip of the surface of the top layer of the iceberg
- ► You should have a general idea of how engines work and appreciate the productivity increase when using one

Next Week

- LAN MMORPG Party? :)
- Game jam? :))
- Just cancel? :'(

Your choice!